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EXAMINER	
PATEL, DHARTI HARIDAS	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/718,021	TAYLOR, BRIAN J.	
	Examiner	Art Unit	
	DHARTI H. PATEL	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 March 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,14-26,28-34,51-53,56-63,65,67,70,72,73 and 76-82* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,14-26,28-34,51-53,56-63,65,67,70,72,73 and 76-82* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

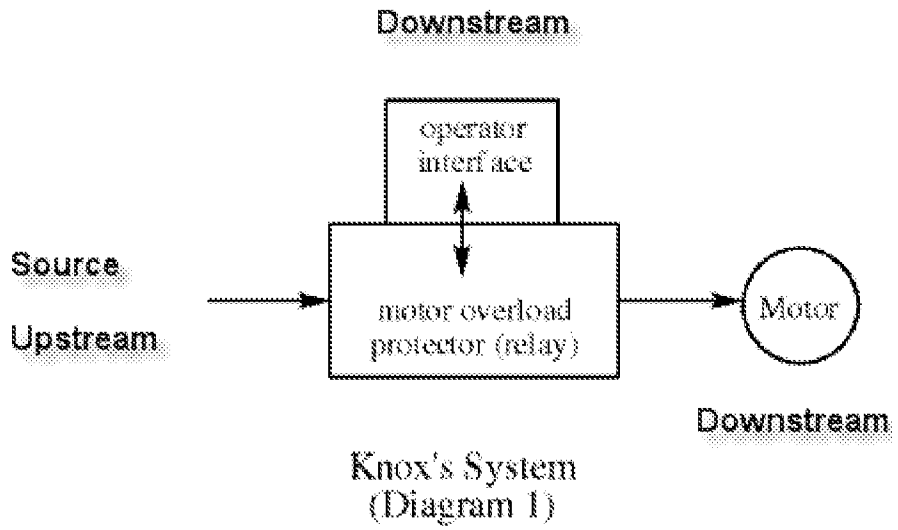
Claims 1-9, 14-21 and 24-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Knox et al. Publication No. 20040252421.

With respect to Claim 1, Knox discloses a controller [Figs. 1 and 2, Digital Programmable Overload Protector 1, which comprises Removable User Interface 2 along with Housing Base 41, Transformer Housing 44 and DSP Housing 46] for a machine [par. 0001 "motor"], comprising:

a machine mountable base [Fig. 3, the base module comprises stacked modules-DSP Housing 46, Transformer Housing 44, and Housing Base 41; pars. 0020, 0094, the "base module"] comprising a motor protection device housed in the base [Fig. 3, the Digital Signal Processor DSP 55 in DSP Housing 46; pars. 0008; 0095] and a network terminal [Fig. 1, RS 485 communications 8; par. 0147 lines 8-11; par 0027. Note: interpreted in view of applicant's spec at par. 0013 and 0015] configured to connect the base to a central or remote system via a power and data distribution structure; and

a modular control unit [Fig. 5, Modular Control Unit 2 containing Microcontroller 75; par. 0104] replaceably mountable to the machine mountable base [par. 0030; all

components are mounted to Housing Base 41 and are modularized/replaceable], wherein the modular control unit is coupled electrically downstream of the motor protection device [see Diagram 1 below for illustration. The Modular Control Unit 2, labeled "Operator Interface" is *downstream* of the source since 2 receives power from the source. Note that power is supplied to the entire Digital Programmable Overload Protector 1 (including Modular Control Unit 2) via power input 12, Fig. 1, pars. 0102, 0105] and comprises control circuitry [Modular Control Unit 2 contains Microcontroller 75] configured to be coupled electrically upstream of a motor [see Diagram 1 below for illustration. The Modular Control Unit 2, labeled "Operator Interface" is *upstream* with respect to the Motor because 2 is electrically coupled between the source and the motor, inside of Digital Programmable Overload Protector 1 in order to receive power and data via connector block 23 (Figs. 2 and 4; par. 0088) and connector pad 80 (Fig. 5, par. 0105)] of the machine and control the motor in operation [the circuitry of microcomputer 75 allows the user to enter control commands and receive status updates of the motor being controlled- par. 0104-0109. The machine being controlled is the low voltage motor mentioned in paragraph 0002].



Knox's System
(Diagram 1)

Applicant's Diagram 1 showing Knox's arrangement, used to illustrate "upstream" and "downstream" limitations

With respect to Claim 2, Knox discloses the motor protection device comprises a short-circuit protective device [col. 1 lines 0010 state ground faults are protected against. A ground fault is a type of short circuit condition. For illustrative purposes only, see the EC&M document enclosed. Fig. 4 trip contact relay 66 is a short circuit protective device that works in conjunction with the DSP; par. 0101. Line fuses 68 also provide short circuit/overload protection par. 0102].

With respect to Claim 3, Knox discloses the short-circuit protective device comprises an instantaneous trip [par. 0101, no time delay in tripping is specified, therefore the trip occurs instantaneously].

With respect to Claim 4, Knox discloses the short-circuit protective device comprises a magnetic circuit breaker [Fig. 4 trip contact 66 comprises a magnetic coil].

With respect to Claim 5, Knox discloses the motor protection device comprises a disconnect device [par. 0101; disconnect occurs via trip contact relay 66 which controls the on/off of the users motor contactor/circuit breaker].

With respect to Claim 6, Knox discloses the disconnect device comprises a local lockout [par. 0101- failsafe trip contact control circuit 65 electrically resets the users motor contactor/circuit breaker if it senses a failure in the DSP; and par. 0095 lines 16-22- reset supervisor 64 electrically locks out the DSP if operating conditions are unreliable; par. 0147- software will lockout the trip contacts from being reset].

With respect to Claim 7, Knox discloses the modular control unit comprises an overload protection device and a contactor [Fig. 4 trip contact relay 66 is an overload protection device that works in conjunction with the DSP 55, par. 0101].

With respect to Claim 8, Knox discloses the modular control unit comprises a programmable electronic overload [the device is a digital programmable motor overload relay; par. 0002; par. 0109 programming inputs entered through interface keypad 6].

With respect to Claim 9, Knox discloses the modular control unit comprises an electromagnetic contactor [Fig. 4 trip contact relay 66 with coil].

With respect to Claim 14, Knox discloses the machine mountable base comprises at least one sensor terminal [Fig. 3 terminal 36 connecting to current transformer 37; par. 0090].

With respect to Claim 15, Knox discloses the machine mountable base comprises at least one actuator terminal [Fig. 3 trip contacts 33].

With respect to Claim 16, Knox discloses a motor controller [Fig. 1, Digital Programmable Motor Overload Protector 1], comprising:

a motor mountable base [Fig. 3, the base comprises stacked modules- DSP Housing 46, Transformer Housing 44, and Housing Base 41; par. 0020, the base housing portion] comprising a short-circuit tripping disconnect [Fig. 4, Trip Contact Relay 66 is a short circuit protective device that works in conjunction with the DSP 55, par. 0101]; and

a replaceable control unit [Fig. 5 Modular Control Unit 2 containing Microcontroller 75; par. 0104; the module is replaceable] removably coupled to the motor mountable base, wherein the replaceable control unit is coupled electrically downstream of the short circuit tripping disconnect [see Diagram 1 above for illustration. The Modular Control Unit 2, labeled "Operator Interface" is *downstream* of the Trip Contact Relay 66 since 66 is inside Digital Programmable Motor Overload Protector 1 (labeled Relay) and 1 is downstream from the source. Note that power is supplied to the entire Digital Programmable Overload Protector 1 (including Modular Control Unit 2) via power input 12, Fig. 1, pars. 0102, 0105] and comprises control circuitry [Modular Control Unit 2 contains Microcontroller 75] configured to be coupled electrically upstream of a motor [see Diagram 1 below for illustration. The Modular Control Unit 2, labeled "Operator Interface" is *upstream* with respect to the Motor because 2 is electrically coupled between the source and the motor, inside of Digital Programmable Overload Protector 1 in order to receive power and data via connector block 23 (Figs. 2 and 4; par. 0088) and connector pad 80 (Fig. 5, par. 0105)] of the machine and control

the motor in operation [the circuitry of microcomputer 75 allows the user to enter control commands and receive status updates of the motor being controlled- par. 0104-0109. The machine being controlled is the low voltage motor mentioned in paragraph 0002].

With respect to Claim 17, Knox discloses the short-circuit tripping disconnect comprises a magnetically tripping disconnect [Fig. 4 trip contact 66 comprises a magnetic coil].

With respect to Claim 18, Knox discloses the short-circuit tripping disconnect comprises a disconnect lockout [par. 0101- disconnect occurs via trip contact relay 66 which controls the on/off of the users motor contactor/circuit breaker. Failsafe trip contact control circuit 65 electrically resets the users motor contactor/circuit breaker if it senses a failure in the DSP; and par. 0095 lines 16-22- reset supervisor 64 electrically locks out the DSP if operating conditions are unreliable; par. 0147- software will lockout the trip contacts from being reset].

With respect to Claim 19, Knox discloses the motor mountable base comprises at least one communication terminal [par 0027].

With respect to Claim 20, Knox discloses that the at least one communication terminal comprises a machine network terminal adapter to facilitate networking of a plurality of machine components [par. 0027].

With respect to Claim 21, Knox discloses the replaceable control unit comprises an adjustable overload [the device is a digital programmable motor overload relay and therefore adjustable; par. 0002; par. 0109 programming inputs entered through interface keypad 6] and a contactor [Fig. 4 trip contact relay 66].

With respect to Claim 24, Knox discloses the replaceable control unit comprises at least one monitoring device [Fig. 3 terminal 36 connecting to current transformer 37; par. 0090].

With respect to Claim 25, Knox discloses the replaceable control unit comprises at least one diagnostic device [par. 0212 Table U3- FAIL DIAG code signals internal DSP diagnostic failure].

With respect to Claim 26, Knox discloses the replaceable control unit comprises at least one manual control mechanism [par. 0147 critical failure will result in a lockout. Par. 0215 Table U6 commands UAR and OAR- manual reset is required to clear the trip, Fig. 1 button 7, par. 0015].

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 16, 31, 34, 51, and 79 are rejected under 35 U.S.C. 102(b) as being anticipated by Brown et al., U.S. 6,388,563.

With respect to Claims 1, 16 and 51, Brown discloses a machine, comprising:

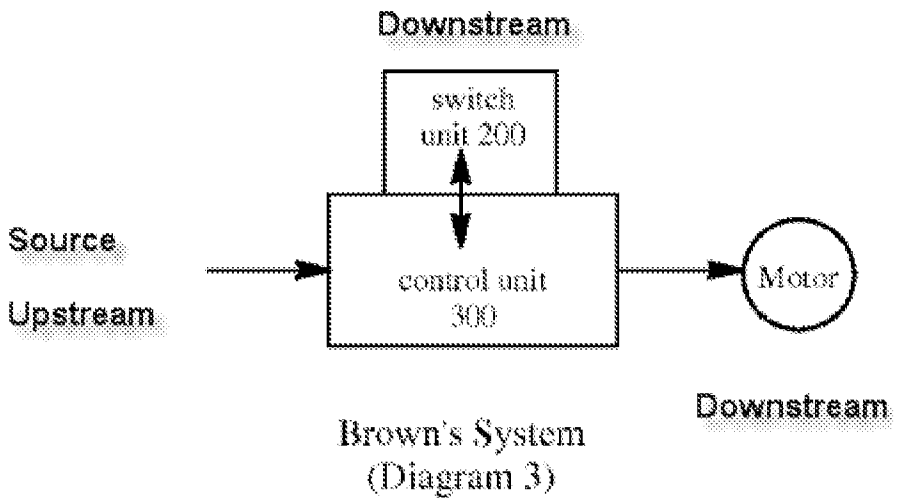
a motor [col. 1 lines 17-25]; and

a motor controller mounted to the motor [Fig. 1, Emergency Stop Device 100; col. 1 lines 46-52], comprising:

a modular base [Fig. 1, Control Unit 300] comprising motor protection circuitry [comprises protection circuitry on Circuit Boards 306, 308 inside 300, Figs. 2 and 5. Col. 4 lines 40-48. *Short circuit tripping disconnect* is mounted in the base 300, col. 10 lines 15-23]; and

a modular motor control unit [Fig. 1, Switch Unit 200] coupled to the modular base [col. 2 lines 24-45; col. 3 lines 16-18] electrically downstream of the motor protection circuitry [Switch Unit 200 is downstream of the protection circuitry on Circuit Board 306, 308 inside of Control Unit 300 (see Figs. 2 and 5) because circuit boards 306, 308 are closer to the source than Switch Unit 200. Note in Fig. 1 that power is first received by control unit 300 (which contains Circuit Boards 306, 308) via the terminal blocks indicated at 300, then power is sent to Switch Unit 200 via the terminals indicated at 302. See Diagram 2 below for illustration] and comprising motor control circuitry [comprising switch 202 of Switch Unit 200 and circuit board 206. Col. 3 lines 36-42] configured to be coupled electrically upstream of the motor [Switch 202 and circuit board 206 of Switch Unit 200 is electrically coupled to control unit 300, which is *upstream* of the motor in order to control/protect the motor, thus 202 and 206 are upstream of the motor. See Diagram 3 below], wherein the motor control circuitry is cooperatively operable with the motor protection circuitry, the modular motor control unit being selectively replaceable from a plurality of different types of motor control units [col. 7 lines 55-62; col. 8 lines 8-12; col. 8 lines 21-31], and

a motor/machine connection terminal [Fig. 2, via 302] coupling the modular motor control unit directly to the motor to enable control of the motor by the modular motor control unit [col. 3 lines 25-28].



Applicant's Diagram 3 showing Brown's arrangement, used to illustrate "upstream" and "downstream" limitations

With respect to claims 31 and 34, Brown discloses a controller [Fig. 1, Emergency Stop Device 100] for a machine system [col. 3 lines 5-15], comprising:

an on-machine base [Fig. 1, Control Unit 300] comprising a machine protection device [Switch Unit 200, Figs. 2 and 5]; and

a control unit [Fig. 1, circuitry on Circuit Board 308 and Switch Unit 200] coupled electrically downstream of the motor protection circuitry [Switch Unit 200 is downstream of the protection circuitry on Circuit Board 306, 308 inside of Control Unit 300 (see Figs.

2 and 5) because circuit boards 306, 308 are closer to the source than Switch Unit 200. Note in Fig. 1 that power is first received by control unit 300 (which contains Circuit Boards 306, 308) via the terminal blocks indicated at 300, then power is sent to Switch Unit 200 via the terminals indicated at 302. See Diagram 2 below for illustration] and comprising control circuitry [col. 9 lines 3-14; col. 9 lines 66-67 and col. 10 lines 1-11] configured to be coupled electrically upstream of the motor [Switch 202 and circuit board 206 of Switch Unit 200 is electrically coupled to control unit 300, which is *upstream* of the motor in order to control/protect the motor, thus 202 and 206 are upstream of the motor. See Diagram 3 above] at least one machine in the machine system and control the motor in operation [an ON/OFF command constitutes control], wherein the control unit is selectable from a plurality of different types of control units having different types of control circuitry [col. 7 lines 55-62; col. 8 lines 8-12; col. 8 lines 21-31], the control unit is replaceably mountable to the on-machine base [as seen in Fig. 1], and the on-machine base and the control unit are cooperative to provide desired on-machine controllability.

With respect to claim 79, see the combined rejection for claims 1, 16, 31, 34, and 51 under Brown above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 10-11 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knox et al, Publication No. US 2004/0252421, in view of Hollenbeck, Patent No. 5,557,182.

With respect to Claims 10 and 22, Knox teaches the controller of Claims 1 and 16 respectively, but does not teach a soft start machine controller. Hollenbeck teaches a control unit that comprises a soft start machine controller [col. 12 lines 13-14].

Knox and Hollenbeck are analogous means of controlling motors. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add soft start control capability to Knox, as taught by Hollenbeck, for the purpose of including the benefits of soft start control to the motor. Soft start capability is desirable to prevent stressing the power supply as well as the motor windings from sudden loading, which is well known to shorten the lifespan of electrical equipment. Additionally, ordinary skill in the art would incorporate Knox's Overload Protector 1 protective features into Hollenbeck's soft-start controller for the benefit of protecting Hollenbeck's motor from overload.

With respect to Claims 11 and 23, Knox teaches the controller of Claims 1 and Claims 16 respectively, but does not teach a variable frequency machine drive. Knox's

programmable device is implicitly capable of controlling/protecting any motor in general [par. 0002; par 0010], including a motor with variable frequency machine drive. However, this is not elaborated upon in the specification.

Hollenbeck teaches a control unit for a motor that comprises a variable frequency machine drive [col. 4 lines 47-52].

Knox and Hollenbeck are analogous means of controlling motors. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add variable frequency control capability to Knox, as taught by Hollenbeck, for the purpose of including the benefits of variable frequency control to the motor. Variable frequency machine drives are a well known and desirable means of controlling induction motors because this is an efficient means of motor control that results in less wasted power. Additionally, ordinary skill in the art would incorporate Knox's Overload Protector 1 protective features into Hollenbeck's variable frequency motor controller for the benefit of protecting Hollenbeck's motor from overload.

Claims 10-11, 22-23, 29 and 57-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haudry et al., U.S. Patent No. 6,879,230, in view of Hollenbeck, Patent No. 5,557,182.

With respect to Claims 10, 22, 29, and 58, Haudry teaches the controller of Claims 1, 16, etc. respectively, but does not teach a soft start machine controller. Hollenbeck teaches a control unit that comprises a soft start machine controller [col. 12 lines 13-14].

Haudry and Hollenbeck are analogous means of controlling motors. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add soft-start control capability to Haudry, as taught by Hollenbeck, for the purpose of including the benefits of soft-start control to the motor. Soft start capability is desirable to prevent stressing the power supply as well as the motor windings from sudden loading, which is well-known to shorten the lifespan of electrical equipment. Additionally, it is desirable to add Haudry's motor protection features to Hollenbeck for the intrinsic protection benefits of Haudry such as short-circuit trip.

With respect to Claims 11, 23, and 57, Haudry teaches the controller of Claims 1 and Claims 16 respectively, but does not teach a variable frequency machine drive. Hollenbeck teaches a control unit for a motor that comprises a variable frequency machine drive [col. 4 lines 47-52].

Haudry and Hollenbeck are analogous means of controlling motors. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add variable frequency control capability to Haudry, as taught by Hollenbeck, for the purpose of including the benefits of variable frequency control to the motor. Variable frequency machine drives are a well-known and desirable means of controlling induction motors because this is an efficient means of motor control that results in less wasted power.

Claims 1-9, 14-21, 24-26, 28, 30, 32, 34, 51-53, 56, 59-63, 65, 67, 70, 72-73 and 76-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haudry et al., U.S. Patent No. 6,879,230.

With respect to Claims 1, 16 and 51, Haudry discloses a machine, comprising:

a motor [col. 4 lines 7-16]; and

a motor controller [Fig. 1], comprising:

a modular base [Fig. 1, Housing 1] comprising motor protection circuitry [Fig. 1; comprising 12, 14, 16, 18]; such as a short circuit [col. 2 lines 40-50] tripping disconnect [Fig. 1, 16 and trip device 18 which are mounted in the Housing 1 as shown in Fig. 1]; and

a modular motor control unit [Fig. 1; comprising Protection and Control Module 2 with removable Control or Communication Module 3] coupled to the modular base [as shown in Figs. 1 and 3; col. 2 lines 34-38; col. 3 lines 5-15] electrically downstream of the motor protection circuitry [Power enters Housing 1 at power terminal block 13a, power line 15A and passes though contacts 12 then enters Protection and Control Module 2 via power line 15B. See Fig. 1, col. 1 lines 56-67. Thus 2 is electrically *downstream* of 12, 14, 16, 18] and comprising motor control circuitry [col. 1 lines 24-33; col. 4 lines 7-16] configured to be coupled electrically upstream of the motor [The motor is connected to the power terminal block 13b. Power enters Housing 1 at power terminal block 13a, power line 15A and passes though contacts 12 then enters Protection and Control Module 2 via power line 15B. Power then flows out to the motor on power line

15C, terminal 13b. See Fig. 1, col. 1 lines 56-67. Therefore the motor control circuitry of 2 is *upstream* of the motor], wherein the motor control circuitry is cooperatively operable with the motor protection circuitry, the modular motor control unit being selectively replaceable from a plurality of different types of motor control units [col. 3 lines 5-10; col. 3 lines 41-44; col. 3 lines 54-62; col. 3 lines 63-67; col. 4 lines 7-16] and

a machine connection terminal [Fig. 1; 24, 25] configured to enable the modular control unit to couple directly [interpreted as coupled with potentially intervening components] with the machine [col. 1 lines 20-23].

Haudry does not explicitly disclose that Fig. 1 housing 1 is mounted on a motor; however, this is an obvious modification to make based on what is conventionally known in the art; and one of ordinary skill would mount Haudry's Fig. 1 housing 1 (which comprises a din mounting rail) to a motor for the well-known benefit of accomplishing local, onsite control/protection of the motor. One-site mounting reduces wiring costs of the installation.

With respect to claim 79, Haudry discloses a controller for a machine system, comprising:

a modular control unit [Fig. 1; comprising protection and control module 2 with removable control or communication module 3], comprising:

control circuitry [Fig. 1, inside 2 and 3; col. 1 lines 24-33; col. 2 lines 34-37] configured to directly control a motor [col. 4 lines 7-16] of a machine;

a first connector [Fig. 1, 26A,26B; 24,25; alternatively 23] configured to couple with an on-machine motor protection base [Fig. 1, housing 1] to enable cooperative operability of the control circuitry with motor protection circuitry [Fig. 1, 12, 14, 16, 18] of the on-machine motor-protection base, the modular control unit being disposed electrically downstream [Power enters Housing 1 at power terminal block 13a, power line 15A and passes though contacts 12 then enters Protection and Control Module 2 via power line 15B. See Fig. 1, col. 1 lines 56-67. Thus 2 is electrically *downstream* of 12, 14, 16, 18] of the motor-protection circuitry and electrically upstream [The motor is connected to the power terminal block 13b. Power enters Housing 1 at power terminal block 13a, power line 15A and passes though contacts 12 then enters Protection and Control Module 2 via power line 15B. Power then flows out to the motor on power line 15C, terminal 13b. See Fig. 1, col. 1 lines 56-67. Therefore the motor control circuitry of 2 is *upstream* of the motor] of the motor; and a second connector [Fig. 1, 19A,B; 24,25; alternatively 23] configured to couple with the motor of the machine to enable control of the machine by the modular control unit [col. 2 lines 34-50]; wherein the modular control unit is selected from and interchangeable with a plurality of modular control units each having different control circuitry [col. 3 lines 5-10; col. 3 lines 41-44; col. 3 lines 54-62; col. 3 lines 63-67; col. 4 lines 7-16].

Haudry does not explicitly disclose that module 2 (protection and control) and module 3 (communication) can be one module (i.e. “a modular control unit”). However, one of ordinary skill in the art would know that combining the two modules into one would yield benefits intrinsic to integration, such as manufacturing cost reduction and

reduced parts count (it costs more to fabricate two separate modules that it does to fabricate one). Therefore It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the two modules 2 and 3 into one module for the benefit of cost reduction and reduced parts count.

With respect to Claims 31 and 34, Haudry discloses a controller [Fig. 1] for a system of distributed machines [col. 4 lines 7-15; the motor, the motor's load, mechanical subassembly 14], comprising:

a machine mountable base [Fig. 1, DIN rail on housing 1], comprising:

a short-circuit protective device [Fig. 1, 12, 14, 16, 18; col. 2 lines 40-50]; and

a disconnect device [Fig. 1, 16 and trip device 18]; and

a modular control unit [Fig. 1; comprising protection and control module 2 with removable control or communication module 3] coupled electrically downstream of the short-circuit protective device [Power enters Housing 1 at power terminal block 13a, power line 15A and passes though contacts 12 then enters Protection and Control Module 2 via power line 15B. See Fig. 1, col. 1 lines 56-67. Thus 2 is electrically *downstream* of 12, 14, 16, 18] and replaceably mountable to the machine mountable base [Fig. 3; col. 2 lines 34-39, col. 3 lines 5-15] wherein the modular control unit comprises control circuitry configured to be coupled electrically upstream [The motor is connected to the power terminal block 13b. Power enters Housing 1 at power terminal block 13a, power line 15A and passes

though contacts 12 then enters Protection and Control Module 2 via power line 15B. Power then flows out to the motor on power line 15C, terminal 13b. See Fig. 1, col. 1 lines 56-67. Therefore the motor control circuitry of 2 is *upstream* of the motor] of a motor of at least one machine [col. 4 lines 7-15; the motor, the motor's load, mechanical subassembly 14] in the system of distributed machines and control the motor in operation [ON/OFF trip via 12, 14, 16, 18 constitutes control].

With respect to Claims 2-9, 14, 15, 17-21, 24-26, 28, 30, 32, 52-53, 56, 59, and 60-63, see above remarks and Haudry's disclosure.

With respect to Claims 70 and 72, Haudry discloses that the modular control unit comprises an output connector [Fig. 3, power terminal blocks 13b] configured to couple with the machine/at least one of the machines [the motor being controlled col. 4 lines 7-16; the cable is the power cables connected to power terminal block 13b to supply the motor; col. 1 lines 63-67].

With respect to Claims 65, 67, and 73, Haudry discloses that the modular control unit is selected from and interchangeable with a plurality of modular control units, each having different control circuitry [col. 3 lines 5-10; col. 3 lines 41-44; col. 3 lines 54-62; col. 3 lines 63-67; col. 4 lines 7-16].

With respect to Claims 76-78, Haudry discloses the on-machine motor protection base comprises a short-circuit protective device [Fig. 1, 16 and trip device 18; col. 2 lines 40-50] housed therein.

Claims 80-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haudry et al., U.S. Patent No. 6,879,230, in view of Knox et al., Publication No. 2004/0252421.

With respect to claim 80, Haudry discloses the second connector as recited in claim 79, but does not disclose an external cable disposed on an external surface of the modular control unit while the modular control unit is coupled to the on-machine motor protection base.

Knox discloses an external cable [Fig. 2, 19] disposed on the external surface of a modular control unit [Fig. 2, 20] while the modular control unit is coupled to the on-machine motor protection base [Fig. 3, 41, 44, 46].

Haudry and Knox are analogous motor protection devices with user interfaces. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize an umbilical cable, as taught by Knox, with the control interface 3 of Haudry for the benefit of allowing users to remotely (which is intrinsically safer with respect to moving machinery) monitor/control the motor/machine to which the interface is connected.

With respect to claim 81, Haudry discloses the connectors as recited in claim 79, does not explicitly show connectors disposed on opposite sides of the modular control unit; however, one of ordinary skill in the art can easily revise placement of the connectors as the situation requires [i.e. connector placement is a design choice, in view of Haudry's existing connectors].

With respect to claim 82, Haudry discloses wherein the modular control unit comprises a user interface [Fig. 1, 3], and both the user interface and the second connector are externally accessible [externally electrically accessible via I/O 39C. Fig. 5] while the modular control unit is coupled to the on-machine motor protection base [as shown in Figs 1 and 3].

Response to Arguments

Applicant's arguments received 03/19/2010 have been fully considered but they are not persuasive.

In regards to Claim 1, applicant argues on page 16 of REMARKS that "…the operator interface does not control the motor." The examiner disagrees. The motor is controlled by microprocessor 75 which accepts settings and commands from the operator using Modular Control Unit 2 to enter such settings. Pars. 0104-0109.

Applicant argues that "the applicant's control circuitry is recited as being disposed between the protection device and the motor, and controls the motor." The examiner disagrees, and notes that the limitation of claim 1 specifically requires "the modular control unit is coupled electrically downstream of the motor protection device" and "comprises control circuitry configured to be coupled electrically upstream of a motor of the machine and control the motor in operation. Knox is seen to disclose the recited limitations, as explained in the rejection of claim 1 above.

Applicant argues on page 16 that "Knox is completely silent with regard to control circuitry being electrically downstream of a protection device." The examiner disagrees. As understood, the terms upstream and downstream serve to identify the location of the

source (presumably upstream) and the location of any load devices (presumably downstream). Knox discloses wherein the modular control unit is coupled electrically *downstream* of the motor protection device [see Diagram 1 above for illustration. The Modular Control Unit 2, labeled "Operator Interface" is *downstream* of the source since 2 receives power from the source. Power is supplied to the entire Digital Programmable Overload Protector 1 (including Modular Control Unit 2) via power input 12, Fig. 1, pars. 0102, 0105].

Applicant argues on page 16 that "the system of Knox is configured to send information of regulation operation of the relay, and not the motor." The examiner disagrees. The circuitry of microcomputer 75 allows the user to enter control commands and receive status updates of the motor being controlled. Par. 0104-0109. Controlling operation of the Digital Programmable Overload Protector 1 is to control the motor. Par. 0008 "programming means for inputting", "means for interrupting electrical power applied to a motor", "means for maintaining operation during electrical power disruptions" are all control functions of the motor.

Applicant argues on page 17 "a user interface does not constitute a control unit for controlling a motor in operation". The examiner disagrees. The control and protection functions of Digital Programmable Overload Protector 1 (DPOP 1) allows the user to enter settings that impact the motor. This is the stated purpose of the DPOP 1. Turning a motor ON or OFF is an aspect of control. See the passage above.

In regards to the rejection of claims 1, 16 and 51 as rejected under Brown; applicant argues on page 20 of REMARKS, "Inasmuch as the examiner asserted that

the modular switch unit 200 is a modular motor control unit (with which the applicant does not agree), the applicant stresses that the modular switch unit 200 is not electrically downstream of a motor protection device/circuitry, and *does not control the motor in operation*." The examiner disagrees. Switch Unit 200 is a modular control unit because Brown discloses it as such. Col. 3 lines 16-18 state "…Switch Unit 200 and a control unit 300 which can be selectively coupled together in a modular manner." Thus Switch Unit 200 is modular. Col. 3 lines 25-28 state "…the switch 200 is operably coupled to the controller 302 whereby the controller 302 may appropriately control the power source when the switch is converted to the emergency state." Thus Switch Unit 200 controls the ON/OFF state of a motor. Further, Switch Unit 200 is seen to be *downstream* of the protection circuitry on Circuit Board 308 inside of Control Unit 300 (see Figs. 2 and 5) because circuit board 308 is closer to the source than Switch Unit 200. Note in Fig. 1 that power is received by control unit 300 (which contains Circuit Board 308) via the terminal blocks shown, then power is sent to Switch Unit 200 via the terminals shown at 302. See Diagram 2 above for illustration.

Per arguments for claims 1, 16, 31, 34, and 51:

The recited "modular base"/ "motor mountable base"/"machine mountable base"/ "on-machine base" is equated to Control Unit 300, Fig. 1.

The recited "replaceable control unit"/ "modular motor control unit"/ "modular control unit"/ "control unit" is equated to Switch Unit 200.

The recited "motor protection device"/ "motor protection circuitry"/ "machine protection device" comprises protection circuitry on Circuit Boards 306, 308 inside 300, Figs. 2 and 5. Col. 4 lines 40-48.

The recited "control circuitry"/ "motor control circuitry" comprises switch 202 of Switch Unit 200 and circuit board 206. Col. 3 lines 36-42.

Applicant argues on page 21 that "…the device 100 cannot possibly be replaceably mountable to unit 300 …as unit 300 is part of the device 100." The examiner disagrees. The limitation (Claim 31) recites, "…the control unit [Switch Unit 200] is replaceably mountable to the on-machine base [Control Unit 300]". Brown discloses this in Fig. 2.

The applicant argues on page 21 that the examiner "alleged unit 200 to be a control unit in the rejection of claims 1, 16, and 51, and alleged the same to be a motor protection device in the rejection of claims 31 and 34." The examiner notes that each of these claims are independent of each other, and there are no limitations in the claims that preclude Control Unit 200 from being interpreted in a dual manner, or as having dual functions. Brown's disclosure states that Control Unit 200 accomplishes both *a protective function* (col. 3 lines 18-21) and *a control function* (col. 3 lines 25-29). Brown is seen to equate protection of the motor and control of the motor as substantially the same things. Additionally, specific portions of 200 and 300 are now shown in the action above to better reflect control and protection functions.

In regards to the Knox in view of Hollenbeck rejection of claims 10-11 and 22-23, applicant argues on page 24 that the proposed combination is improper if it would

change the principle of operation of the cited reference or render it unsatisfactory for its intended purpose…and that Knox requires a user interface, while Hollenbeck discloses a controller for a motor driving a fan for inducing a draft in an exhaust. The examiner disagrees that the combination renders either reference unsuitable for its intended purpose. As the combination is laid out in the action, ordinary skill would understand that it is the DPS 55 protective features of Knox that is being combined with the soft-start features of Hollenbeck. Both Knox and Hollenbeck teach analogous motor control devices; that Hollenbeck's motor is specifically for driving a fan is immaterial to the combination. Ordinary skill would still find it desirable to add Knox's protective features to Hollenbeck's soft-start controller for the fan motor [refer to rejection of claims 10-11 and 22-23] for the benefit of protecting that fan motor.

Applicant argues on page 24 that "replacing the user interface module of Knox with a soft start machine controller or variable frequency machine drive would defeat all of the overload notification and monitoring features of Knox." The examiner notes that the user interface features of Knox need not be replaced, rather Hollenbeck's variable frequency and soft start control functions can be added to Knox, for the benefits set forth in the action [refer to rejection of claims 10-11 and 22-23]. Therefore the examiner disagrees that the combination is improper.

In regards to the rejections over Haudry, applicant argues on page 26 that the modular control unit comprising motor control circuitry is electrically upstream (as opposed to electrically downstream) of the motor. The examiner disagrees. The power enters Housing 1 (Haudry, Fig. 1) at power terminal block 13a, power line 15A and

passes though contacts 12 then enters Protection and Control Module 2 via power line 15B. See Fig. 1, col. 1 lines 56-67. Thus Protection and Control Module 2 is electrically *downstream* of motor protection circuitry 12, 14, 16, 18. See Rejection under Haudry.

The applicant argues on page 27 that "Haudry fails to disclose control circuitry that is configured to control a motor of a machine in operation as the presently amended claims recite". The examiner disagrees. Haudry discloses Electronic Protection and Control Module 2 controlling a motor in operation. Col. 2 lines 1-3 state. "The mobile contacts 12 of the poles 11 are actuated by the control part in contactor mode, under the control of the power supply to an electromagnet 16". Turning the motor ON or OFF constitutes control.

Applicant requests "objective evidence" be presented on page 27. The examiner has provided sufficient evidence that shows Haudry is controlling the motor. The express disclosure of Haudry states, "The control part is associated with an electronic protection and control module 2 which …is removeably connected to housing 1 containing the control part." Col. 2 lines 34-37. Protective elements 12, 14, 16, 18 are tripped in response to an overload of the connected motor. Col. 1 lines 4-28. Col. 4 lines 7-16 expressly state that a **motor load** is being monitored. Thus the examiner does not believe any further "objective evidence" is necessary other than that disclosed by Haudry. The applicant has not explained why the protective function of turning a motor ON/OFF does not constitute "control."

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DHARTI H. PATEL whose telephone number is (571)272-8659. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jared Fureman can be reached on 571-272-2391. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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/DHARTI H. PATEL/
Examiner, Art Unit 2836
11/22/2010